1983

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G. W. Libal
South Dakota State University

R. C. Wahlstrom
South Dakota State University

Roland Hanson
South Dakota State University

PEN SPACE AND ANTIBIOTIC EFFECTS ON PERFORMANCE OF GROWING-FINISHING PIGS

G. W. Libal, R. C. Wahlstrom and Roland Hanson

Department of Animal and Range Sciences

SWINE 83-6

The detrimental effects of crowding weaned pigs and the advantage of inclusion of an antibiotic in the diets fed from 4 weeks of age to 40 lb has been documented (SWINE 81-8) as a part of a North Central regional project by the Swine Confinement Management Committee. It is of interest to know if the same responses to crowding and presence of antibiotics can be observed with growing-finishing pigs. This study, also part of a regional study, was designed to evaluate the possible effect of antibiotics and pen space on growing-finishing pigs and the interaction of these two factors.

Procedure

One hundred twenty pigs averaging approximately 44 lb were allotted based on sex and weight to two replications of the four management treatments. There were 15 pigs per pen consisting of nine gilts and six barrows. Pen size was altered to provide either 3.5 or 5.0 sq ft per pig during the growing period and 6.0 or 8.0 sq ft per pig during the finishing period. Antibiotic treatments were tylosin at either 0 or 40 g per ton during the growing period and 0 or 20 g per ton during the finishing periods. The resulting treatments from this 2 x 2 factorial arrangement were:

	40-125 lb		125-215 lb	
	Grams tylosin per ton	Sq ft pen space	Grams tylosin per ton	Sq ft pen space
Treatment 1	40	3.5	20	6.0
Treatment 2	40	5.0	20	8.0
Treatment 3	0	3.5	0	6.0
Treatment 4	0	5.0	0	8.0

Pigs were purchased from one source and the experiment was conducted at the Cornbelt Research and Extension Center near Beresford, South Dakota. The pigs were housed in an environment modified confinement building with 50% slatted floors. The trial was conducted during the months of June-October. Feed was mixed at the South Dakota State University Feed Processing Unit at Brookings and transported to Beresford as complete feed. Standard diets containing 16% and 14% protein were fed during the growing and finishing periods, respectively.

Results

The results of the experiment are shown in table 1 which shows the combined effects of pen space and antibiotics and in table 2 which shows the influence of the main effects of pen space and antibiotics on pig performance. These data will be combined with other states° data to obtain the full response of pigs to these management practices.

Table 1. Combined Effects of Pen Space and Antibiotics on Growing-Finishing Pig Performance

Antibiotic[a] / Pen space[b]	+ 3.5-6.0	+ 5.0-8.0	- 3.5-6.0	- 5.0-8.0
Initial wt, lb	44.4	44.1	44.4	44.5
Mid-wt, lb	125.1	129.0	123.1	127.9
Final wt, lb	215.4	216.3	215.6	216.0
Growing Period				
Avg daily gain, lb	1.37	1.52	1.41	1.49
Avg daily feed, lb	3.65	3.76	3.66	3.88
Feed/gain	2.68	2.49	2.61	2.60
Finishing Period				
Avg daily gain, lb	1.47	1.65	1.40	1.57
Avg daily feed, lb	5.44	6.43	5.48	5.59
Feed/gain	3.70	3.96	3.91	3.55
Overall				
Avg daily gain, lb	1.42	1.58	1.40	1.53
Avg daily feed, lb	4.57	4.92	4.65	4.73
Feed/gain	3.22	3.13	3.31	3.09

[a] Tylosin included at 0 or 40 and 0 or 20 g per ton during the growing and finishing periods, respectively.

[b] Pen space was either 3.5 or 5.0 sq ft per pig during the growing period and either 6.0 or 8.0 sq ft per pig during the finishing period.

Table 2. Summary of Effects of Pen Space and Antibiotics on Growing-Finishing Pig Performance

	Antibiotic[a]		Pen space (sq ft)[b]	
	+	-	3.5-6.0	5.0-8.0
Growing Period				
Avg daily gain, lb	1.44	1.45	1.39	1.50
Avg daily feed, lb	3.70	3.77	3.65	3.82
Feed/gain	2.58	2.60	2.64	2.54
Finishing Period				
Avg daily gain, lb	1.56	1.49	1.44	1.61
Avg daily feed, lb	5.93	5.53	5.46	6.01
Feed/gain	3.83	3.73	3.81	3.76
Overall				
Avg daily gain, lb	1.50	1.47	1.41	1.55
Avg daily feed, lb	4.47	4.69	4.61	4.83
Feed/gain	3.17	3.20	3.26	3.11

[a] Tylosin included at 0 or 40 and 0 or 20 g per ton during the growing and finishing periods, respectively.

[b] Pen space was changed at approximately 125 lb to reflect the space needs of the growing pig.

Due to only two replications of the treatments at the South Dakota station, no significant treatment effects were found. However, as one observes the data, there are some numerical differences which merit consideration. When data from the other stations are combined with these data, it seems feasible that statistical significance will be observed if the magnitude of differences remains the same.

Essentially no differences were seen due to the inclusions of tylosin in the growing-finishing diets. Average daily gain, average daily feed and feed required per unit of gain were very similar for both periods. This lack of response to antibiotics is usually observed with pigs grown under adequate management practices and without serious disease problems.

Limiting pen space affected gain and efficiency of gain during both the growing and finishing periods. It appears that 3.5 sq ft per pig during the growing period (40 lb to 125 lb) and 6.0 sq ft per pig during the finishing period (125 to 215 lb) were inadequate to support maximum growth or efficiency of growth.

Since no depression of performance was observed due to lack of antibiotic in the diet, no interaction between antibiotic and pen space was observed.

Summary

One hundred twenty pigs weighing approximately 44 lb were allotted to four management treatments consisting of a combination of 0 or 40 and 20 g tylosin per ton and pen space per pig of 3.5 or 5.0 sq ft and 6.0 or 8.0 sq ft, respectively, during the growing and finishing periods. No differences were seen in pig performance due to the presence of antibiotics in the diet. However, depressed gains and poorer feed efficiency were observed when pigs were restricted to 3.5 and 6.0 sq ft per pig during the growing and finishing periods, respectively.